JOHN ENGLER, Governor
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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

OPERATIONAL MEMORANDUM
NO. 14

SUBJECT: USE OF VISIBLE EMISSIONS LIMITS LESS THAN 20% OPACITY IN PERMITS

EFFECTIVE DATE: May 6, 1997

PREAMBLE

Rule 301(1)(c) provides the Department with the authority to set an opacity limit more stringent than 20% opacity as a condition of a permit to install. The Permit Section of the Air Quality Division (AQD) has historically included an opacity limit on virtually all permits. In many cases the opacity limit is included as a surrogate for, or as an indicator of compliance with, a particulate emission limit. However, in some cases visible emission limits have been included when particulate emissions are not involved.

Because of the implementation of the renewable operating permit (ROP) program, which is designed to consolidate and clarify all applicable requirements for a source, AQD staff are reviewing and in some cases questioning the appropriateness of past and present uses of visible emissions limits less than 20% opacity. Each ROP must include monitoring, recordkeeping, and reporting provisions necessary to assure compliance with every applicable requirement to which the source is subject. To assure that the sources and the AQD are not overwhelmed by these new monitoring, recordkeeping, and reporting requirements, it is critical that permits be streamlined to focus on the key requirements that effect air quality and minimize, to the extent possible, overlapping or duplicative requirements. Visible emissions limits below 20% opacity have been identified by the AQD as a likely candidate for clarification and simplification.

POLICY

Rule 301(1)(a) states that "a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than... a 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity." Rule 301 also provides certain exceptions for both lower and higher opacity limitations. In the permit to install and ROP programs, Rule 301(1)(a) will be treated as a requirement that is generally applicable to all emission units at a stationary source (i.e., as a general permit condition) unless there is a reasonable air quality basis for including a lower limit in the permit pursuant to Rule 301(1)(b).

PROCEDURE

1. Visible emission conditions less than 20% opacity will be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for all processes that do not emit or have the potential to emit particulate matter. Processes that emit air contaminants that can form particulate matter (e.g. volatile organic compounds with low-volatility, high concentration nitric or sulfuric acids) will be treated as emitting particulate matter for the purpose of determining an appropriate visible emissions limit.

2. Visible emission conditions less than 20% opacity may be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for all processes where the visible emission limit was used as a surrogate to insure proper operation of the process equipment or air pollution control equipment. If a visible emission condition less than 20% opacity is not included in the permit, the

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permit must include a condition that directly requires the kind of proper operation for which the visible emission limit was a surrogate. Permit conditions that require proper operation include any of the following:

- A condition that requires that the process not be operated unless the control device is installed and operating properly.

- A condition that specifies an operating parameter for the equipment that indicates that it is operating properly (e.g., a temperature, a pressure drop, or a flow rate). The condition must also specify appropriate monitoring and recordkeeping for the parameter.

- A condition that requires a malfunction abatement program for the equipment pursuant to Rule 911.

3. Determinations on appropriate conditions for specific permits (including permits for the processes discussed in the examples below) should follow the guidance provided in this operational memorandum in conjunction with the existing permit to install and renewable operating permit procedures for communication and consultation between Permits and Compliance staff.

EXAMPLES

AQD staff have reviewed certain processes where visible emissions limits less than 20% opacity have been used and have developed the following specific examples regarding simplification of ROPs and future permits to install.

I. Processes Where Limits Less Than 20% Opacity Can Be Removed from Permits

A. Boilers

There does not appear to be a good air quality basis for including a visible emissions limitation less than 20% opacity on natural gas, fuel oil, and waste oil-fired boilers. Visible emission limits less than 20% opacity have been used as a surrogate to assure proper operation of the boiler. However, specifying routine and scheduled maintenance as recommended by the manufacturer is the overriding and more stringent requirement to assure proper operation. Therefore, visible emission conditions less than 20% opacity can be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for natural gas, fuel oil, and waste oil-fired boilers, provided that routine and scheduled maintenance, as well as appropriate monitoring and recordkeeping requirements, are specified as conditions of the permit.

EXCEPTION: **For large boilers (generally with a heat input of 250 million BTUs per hour or greater), or for any boiler with a history of compliance problems related to poor operation and maintenance, a detailed malfunction abatement plan should be required as a part of the permit pursuant to Rule 911.** District staff would have the responsibility for determining the acceptability of any malfunction abatement plan required pursuant to Rule 911. District and Permit Section staff should agree early in the permit to install review process whether the malfunction abatement program or the requirement to submit a malfunction abatement program will be included in a permit to install.

B. Paint Spray Booths

There does not appear to be a good air quality basis for including a visible emissions limitation less than 20% opacity on paint spray booths. Permits to install for paint spray booths currently are issued with a no visible emissions or 0% opacity limit and a requirement that the booth not be operated unless the overspray control system is installed and operating properly. The rationale has been that the opacity limit is a surrogate for a mass particulate limit and to protect against nuisance conditions such as deposition. However, except for very large paint lines, currently available overspray control systems, if installed and operating properly, will effectively limit particulate emissions from paint spray booths to negligible amounts. It is also likely that, if the overspray systems are not installed and operating properly, nuisance conditions may occur long before visible emissions are detected. For these permits the key and most stringent permit condition is the requirement to install and operate the overspray control system properly. Therefore, visible emission conditions less than 20% opacity can be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for

paint spray booths, provided that the requirement that the booth not be operated unless the overspray control system is installed and operating properly is specified in the permit.
EXCEPTION: **For large paint lines (generally with allowed VOC emissions of 100 tons per year or greater), or for any paint line with a history of compliance problems with the requirement to install and properly maintain the overspray control system, a detailed malfunction abatement plan should be required as a part of the permit pursuant to Rule 911.** District staff would have the responsibility for determining the acceptability of any malfunction abatement plan required pursuant to Rule 911. District and Permit Section staff should agree early in the permit to install review process whether the malfunction abatement program or the requirement to submit a malfunction abatement program will be included in a permit to install.

C. Thermal or Catalytic Incinerators

There does not appear to be a good air quality basis for including a visible emissions limitation less than 20% opacity on processes utilizing a thermal or catalytic incinerator as an add-on control technology. Visible emission limits less than 20% opacity have been used as a surrogate to assure proper operation of the incinerator. However, specifying the operating temperature of the incinerator is the overriding and more stringent requirement to assure proper operation. Therefore, visible emission conditions less than 20% opacity can be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for processes utilizing a thermal or catalytic incinerator as an add-on control technology, provided that the minimum operating temperature of the incinerator, as well as appropriate monitoring and recordkeeping requirements, are specified as conditions of the permit.

EXCEPTION: **For large VOC processes utilizing a thermal or catalytic incinerator as an add-on control technology (generally with allowed VOC emissions of 100 tons per year or greater), or for any process with a history of compliance problems with the requirement to install and properly maintain the incinerator, a detailed malfunction abatement plan should be required as a part of the permit pursuant to Rule 911.** District staff would have the responsibility for determining the acceptability of any malfunction abatement plan required pursuant to Rule 911. District and Permit Section staff should agree early in the permit to install review process whether the malfunction abatement program or the requirement to submit a malfunction abatement program will be included in a permit to install.

D. Printing Processes

There does not appear to be a good air quality basis for including a visible emissions limitation less than 20% opacity on printing processes. Therefore, visible emission conditions less than 20% opacity can be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for printers.

E. Storage tanks

There does not appear to be a good air quality basis for including a visible emissions limitation less than 20% opacity on gasoline, fuel oil, crude oil, propane, liquid organic chemical, or liquid inorganic chemical storage tanks. If the tank is intact and storing what it's intended to store, there should not be visible emissions at any time. Usually, visible emissions from these tanks would mean that the tank is on fire. The requirement that the tank seals be installed and operating properly is the more stringent, overriding condition in this case. Therefore, visible emission conditions less than 20% opacity can be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for storage tanks, provided that the permit includes conditions regarding the proper installation and operation of tank seals.

EXCEPTION: **There are a few chemicals, such as fuming sulfuric acid (SO_3 dissolved in H_2SO_4) that will have a visible plume if the tank is not properly sealed. These will need to be addressed on a case-by-case basis.**

F. Degreasers

There does not appear to be a good air quality basis for including a visible emissions limitation less than 20% opacity on degreasers. Theoretically, if a degreaser totally malfunctioned and boiled off all of the degreasing

solvent in a very short time period, a plume might result, but this is highly unlikely. The primary controlling conditions for a degreaser are 1) to have the appropriate vapor cooling control, e.g., a freeboard chiller, installed and actually providing the intended cooling function; and 2) to have the vapor generating control(s) properly limiting vapor temperature so the solvent doesn't boil away. Other pertinent requirements for degreasers are spelled out in Rules 708, 709 and 710. Also, degreasers using chlorinated solvents are subject to additional requirements specified by the MACT (40 CFR Part 63 Subpart T). Therefore, visible emission conditions less than 20% opacity can be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for degreasers, provided that the appropriate operating parameters regarding a freeboard chiller and vapor temperature controls, as well as, those specified in the identified state and federal rules, are specified in the permit.

G. Cold Cleaners

There does not appear to be a good air quality basis for including a visible emissions limitation less than 20% opacity on cold cleaners. Following the requirements of Rule 707 should be sufficient to minimize emissions from these processes. Cold cleaners using chlorinated solvents are subject to additional requirements specified by the MACT (40 CFR Part 63 Subpart T). Therefore, visible emission conditions less than 20% opacity can be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for cold cleaners, provided that the appropriate operating parameters (as specified in the identified state and federal rules) are specified in the permit.

H. Remediations

There does not appear to be a good air quality basis for including a visible emissions limitation less than 20% opacity on ground water air strippers (all types) and soil vapor extraction systems, including air sparging and various forms of bioremediation. Therefore, visible emission conditions less than 20% opacity can be replaced with a general citation to Rule 301(1)(a) in future permits to install and permits being consolidated into an ROP for these remediation processes.

EXCEPTION: **This does not apply to thermal remediation of soils (i.e., "soil toasters").** These processes should include a 5% opacity limitation pursuant to Rule 230. Seeing a visible emission at the stack would indicate contaminants in the soil that were not accurately disclosed, and/or that the remediation process is not operating properly.

II. Processes Where Limits Less Than 20% Opacity Should Be Retained In Permits

A. Crushers

There is a reasonable air quality basis for including a visible emissions limitation less than 20% opacity on crushers. New crushers are subject to NSPS, Part OOO for non-metallic minerals. This NSPS includes a number of opacity limits less than 20% opacity. The control technology typically employed to comply with the NSPS (e.g., water sprays) can be easily and economically used on existing non-NSPS crushers. Because the emissions from crushing processes are typically fugitive in nature, it is not feasible to assign and determine compliance with a mass emission limitation. Rule 331(b) requires the Department to set particulate emission limits by application based on the "best technically feasible, practical equipment available" for processes not listed in table 31. Therefore, visible emission conditions consistent with NSPS, Part OOO should continue to be used for non-NSPS crushers pursuant to Rule 331(b) in future permits to install and should be maintained where they appear in any permits being consolidated into an ROP.

B. Fugitive Particulate Emissions Sources

There is a reasonable air quality basis for including a visible emissions limitation less than 20% opacity for fugitive particulate emissions sources. Because the emissions are fugitive, it is not feasible to assign and determine compliance with a mass emission limitation. Rule 331(b) requires the Department to set particulate emission limits by application based on the "best technically feasible, practical equipment available" for processes not listed in table 31. Therefore, visible emission conditions less than 20% opacity should continue to be used for fugitive

emissions sources pursuant to Rule 331(b) in future permits to install and should be maintained where they appear in any permits being consolidated into an ROP.

EXCEPTION: **If the permit includes a fugitive dust control program pursuant to Section 5524 of the Act or Rule 371 and the underlying requirement in the Act or Rule lists specific actions and does not specify an opacity limit less than 20% opacity, then those actions can be used as enforceable requirements without an accompanying visible emissions condition less than 20% opacity.** Section 5524(2) of the Act specifically limits the visible emissions from any road, lot or storage pile to 5% opacity and visible emissions from all other fugitive dust sources to 20% opacity. Rule 371 requires a program, including specific control measures or actions, but does not include specific opacity limits.

C. Processes With Particulate Emission Limits Less Than 0.10 Lbs/1000 Lbs

There is a reasonable air quality basis for including a visible emissions limitation less than 20% opacity for processes that have particulate emission limits less than 0.10 pounds per 1000 pounds of exhaust gas. Rule 331(1)(b) requires the Department to set particulate emission limits by application based on the "best technically feasible, practical equipment available" for processes not listed in table 31. Rule 331(1)(c) allows the Department to set particulate limits as a condition of a permit. Rule 331(1)(b) and (c) often result in a particulate emission limit less than 0.10 pounds per 1000 pounds. Additionally, sources often request limits less than 0.10 pounds per 1000 pounds in order to create a "synthetic minor" source or modification and avoid Rule 220 (back when there were particulate non-attainment areas in the State) or PSD review. Rule 301(1)(b) allows the Department to set a visible emission limit more stringent than 20% opacity as a condition of a permit. The Permit Section has tried to set the opacity limit such that it is consistent with the particulate limit. The rationale was to allow for a compliance determination without always requiring particulate emission testing. Typically, the opacity limit had been applied as a "linear function" of the particulate mass emission limit. The "linear function" assumes a 0 percent opacity for <0.01 pounds per 1000 pounds of gas and 20 percent opacity for 0.10 pounds per 1000 pounds of gas and that there is a linear relationship between these points (e.g., 0.05 #/1000# = 10 percent opacity). The use of the "linear function" is being replaced by the following rule-of-thumb:

Particulate Limit Range		**Visible Emission Limit**
(in #/1000# of exhaust gas)	(in grains/dscf)	(in Per Cent Opacity)
0.010 or less	0.0052	5
0.011 to 0.050	0.0053 to 0.026	10
0.051 to 0.075	0.027 to 0.039	15
0.076 or greater	0.040 or greater	20

Therefore, visible emission conditions less than 20% opacity should continue to be used for processes that have particulate emission limits less than 0.10 pounds per 1000 pounds of exhaust gas pursuant to Rule 331(b) and Rule 301(1)(c) in future permits to install and should be maintained where they appear in any permits being consolidated into an ROP. Especially where an applicant has requested and agreed to a specific visible emission limit less than 20% opacity in place of periodic particulate testing as a method of demonstrating compliance with a low particulate emission limit which establishes a "synthetic minor" source or modification.

EXCEPTION:

1. **Where an applicant can show or where staff have sufficient information to determine that the particulate emissions from the process do not correspond with the rule-of-thumb (i.e., they can comply with the required particulate limit at a higher opacity), then the opacity limit should be adjusted accordingly (up to a maximum of 20% opacity) to reflect the actual relationship between particulate and visible emissions.**

2. **Where the permit includes a condition that specifies an enforceable operating parameter for the equipment that indicates that it is operating properly or a malfunction abatement program pursuant to Rule 911 for the process or particulate control equipment, including appropriate monitoring and recordkeeping, then the operating parameter or malfunction abatement program can be used as the enforceable requirement assuring proper operation without an accompanying visible emission limit less than 20% opacity.**

This memorandum is intended to provide guidance to Air Quality Division staff to foster consistent application of Part 55 of Act 451 of the Public Acts of 1994, the Natural Resources and Environmental Protection Act and the administrative rules promulgated thereunder. This document is not intended to convey any rights to any parties nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Questions regarding this memorandum should be directed to Mr. David Yanochko in the Operating Program Unit at 517-373-7035.

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